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INSTITUTE

SIERRA LEONE

# Annual Report

OF THE

## Department of Agriculture

## For the Year 1939

1941

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## For the Year 1939

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# ANNUAL REPORT—AGRICULTURAL DEPARTMENT, 1939.

*February 21st*, 1941.

*From*—The Director of Agriculture,

*To*—The Honourable Colonial Secretary.

Sir,

I have the honour to submit my report for the year 1939.

## SECTION I—INTRODUCTION.

2. In view of the shortage of paper and the necessity of conserving its supply, this report will be kept as short as possible and only a brief resumé of the work of the department will be given.

3. The department started the year with a very heavy programme, as may be seen from the 1938 Annual Report, but the outbreak of hostilities very naturally had a great effect on its activities. Shortly after the commencement of the war, it became necessary to curtail certain of our normal activities and assume instead the heavy responsibility of :—

(i) directing a vigorous campaign to increase the production of food, especially rice, for consumption in this Colony and for export to the Gambia ;

(ii) organising the collection and distribution of food and where necessary, fixing the prices of all the main items ;

(iii) regulating the importation of certain essential foods not produced locally, and finally ;

(iv) organising propaganda for the increased production and shipment of export crops required by the United Kingdom.

4. It was fortunate that this Government had already laid down a policy for agricultural development and had approved the methods to be employed by the Department of Agriculture in implementing that policy. These methods were fully described in my last report and now within the framework of Government's policy we can implement our war policy by the intensification of certain aspects of agricultural development along lines previously determined by local experience and experiment. Thus, while it may be essential for us to increase the production of certain foodstuffs, or export crops other than foodstuffs, all measures taken towards this end can be so correlated with those taken in the past that their continuance in the future will be assured, and any industry built up or augmented during the war can be continued and consolidated when hostilities are over.

5. The main lines of Government policy are given below. The steps taken to implement this policy up to the end of 1938 were described in my last report, and only the new steps taken in 1939 are now given.

The policy is as follows :—

## *A.* The adequate provision of food for the people.

This is to be accomplished by :—

**I. The Improvement and Spread of Swamp Rice Cultivation to such an extent that not only will the needs of the people be supplied in a bad year but there will be a surplus for export in ordinary years.**

New work commenced in 1939.

(i) *Swamp Clearance Scheme.*—A scheme was prepared for financing mangrove clearing to enable the development of swamp rice in the Moyamba District. The Protectorate Mining Benefits Fund approved of a grant of £500 a year for this purpose and during 1939 an estimated area of 645 acres of swamp was cleared.

(ii) *Seed Farm.*—Government approved of the establishment of a Rice Seed Multiplication Farm at Rokupr. The land was selected, surveyed and arrangements made for its lease ; seed was planted during 1939. This farm will enable a greater quantity of pure seed rice to be distributed each year.

(iii) *Irrigation and Drainage Scheme.*—An application was made to the Colonial Development Fund for a thorough survey by an Irrigation and Drainage Engineer to obtain information to put up schemes with regard to the possibilities of developing inland and tidal swamp areas by controlling the water in them. This application originally submitted in 1938 was under discussion during 1939 and in January, 1940 the Colonial Development Fund approved of a free grant of £13,285 for this purpose.

**II. The Better Cultivation of Inland Swamps and Valleys for Rice during the Wet-Season and the introduction of Crops other than Rice in Swamps during the Dry-Season.**

New work commenced during 1939.

*Establishment of Inland Swamp Farms.*—During 1939 the Protectorate Mining Benefits Fund approved of a grant for the establishment of a station to investigate the possibilities of developing and demonstrating improved methods in respect of a more permanent form of cultivation in the swamps and valley bottoms in the interior. A preliminary survey of sites was carried out by Mr. R. R. Glanville before the end of the year. The site provisionally selected is in close proximity to the Livestock Farm and it should be possible to make use of cattle from the Livestock Farm in its development.

**III. The Extension of Garden and Small-field Crops to serve as an Auxiliary Food Supply.**

**IV. The Selection (or Introduction) and Distribution of Seeds and Plants Suitable for I, II and III.**

**V. Improvement of Poultry and Stock.**

New work commenced during 1939.

*Establishment of Livestock Farm.*—A Livestock Farm was established at Tekaw near Makeni, in the northern part of the Protectorate, for the following purposes :—

(*a*) The improvement of the local type of cattle by selective breeding and crossing with imported stock if necessary.

(*b*) To raise good bulls for breeding and cows for distribution.

(*c*) To study methods of animal husbandry.

By the end of the year the warris and sheds had been constructed and houses built for the Livestock Officer and junior staff. A small herd of cattle is in process of formation by selection from local sources.

*Pigs.*—During the year a small herd of local pigs was collected at Njala and Berkshires were imported for crossing with them. Crosses have been successfully effected.

*Poultry.*—Aylesbury ducks were introduced and are doing well at present.

## *B.* The Cultivation of Money Crops or Exploitation of Wild Trees for Export Purposes.

New work commenced during 1939.

(i) *Cocoa.*—A survey of the cocoa area has been carried out by Mr. F. C. Deighton who undertook agricultural duties in addition to specialist duties during wartime. This survey gives us a clear idea of the existing area and the growing importance of this industry.

(ii) *Ginger.*—Canton, Jamaican and Dominican ginger were introduced and grown at Njala. Both the Canton and Jamaican varieties showed great promise.

## *C.* The Arresting of the Degradation of the Forest Growth of Sierra Leone or at any rate increasing the Regeneration Period between Successive Brushings of the Same Area.

## *D.* The Improvement in the Preparation and Marketing of Produce.

*Co-operative Methods.*—During the year the Co-operative Ordinance was passed enabling the Government to make Rules for the working of Co-operative Societies.

## *E.* Preservation of the Standard of Export Produce by Inspection.

## *F.* Co-operation with Education Department where possible in the Teaching of Agriculture.

New work commenced in 1939.

The joint schemes for training Agricultural Apprentices for the Department and teachers for Rural Schools at Njala made a successful start. Two European officers were appointed and the students assembled in April. There were 16 students on the Agricultural side and 15 on the Educational side. The scheme is financed by the Protectorate Mining Benefits Fund.

## *G.* Research.

Continued as shown in my last report.

## *H.* Conservation of Soil.

Towards the latter end of 1939 the Director of Agriculture was appointed Chairman of the Standing Committee to advise Government with regard to measures which should be taken to combat soil erosion.

## *I.* Nutrition.

A Committee has been formed to advise Government on all aspects concerning nutrition. The Director of Agriculture is a member of this Committee.

## *J.* Extension Work.

New work commenced during 1939.

The only new station opened during the year was the Livestock Farm at Tekaw near Makeni.

A provisional site for an inland swamp farm was selected near Makeni.

6. The above briefly indicates the additional steps taken towards implementing Government's agricultural policy during the year. We have been hindered by the employment of some of our officers on war work, but we are fortunate in that all our efforts to produce more food also involve the proper development of agriculture in some way or other, and the work put in for war purposes will not be lost.

### GENERAL REVIEW OF CROPS INCLUDING EXPORTS.

7. The past year, 1939, proved a good average year for upland farmers although the rains were late, but taking the country as a whole, production appears to have been up to normal. Wetland farming continues to increase and this has a stabilising effect on the rice crop.

8. *Rice.*—The harvest was late but fortunately the crop was plentiful and there was no shortage The advent of the war and the presence of the market in the Gambia prevented a slump in price which might otherwise have occurred, and the price rarely dropped below 4*s.* 6*d.* (wholesale) a bushel.

9. It became obvious very shortly after the outbreak of the war that Gambia, which normally imports a considerable amount of rice from the East, would have to rely on Sierra Leone for supplies. We therefore encouraged the planting of foodstuffs other than rice in order to liberate rice for export, with the result that before the end of 1939 it was quite obvious that we should be able to make a very substantial contribution to Gambia's requirements. Some 812 tons of rice were exported during the year.

10. *Export Crops.*—In view of the war and the general control of exports by Government there is little point in describing movements of prices and it is inadvisable to publish any new directions in trade. Only general statistics for the year under review are therefore given under this head. The following table gives the exports of the principal agricultural products during the year:—

EXPORTS OF AGRICULTURAL PRODUCTS IN 1939.

| | | |
|---|---|---|
| Palm kernels ... ... ... | ... Tons | 69,747 |
| Palm oil ... ... ... | ... ,, | 1,168 |
| Piassava ... ... ... | ... ,, | 3,907 |
| Ginger ... ... ... | ... ,, | 2,408 |
| Kola ... ... ... | ... ,, | 1,628 |
| Cocoa ... ... ... | ... ,, | 567 |
| Rice ... ... ... | ... ,, | 907 |
| Chillies ... ... ... | ... ,, | 49½ |
| Coffee ... ... ... | ... ,, | 43 |
| Benniseed ... ... ... | ... ,, | 212 |
| Hides and Skins ... ... | ... Cwt. | 308 |

## SECTION II—WORK OF THE DEPARTMENT OF AGRICULTURE.

11. The year 1939 saw steady progress by the department along the lines of Government's policy for the development of native agriculture. The outbreak of war resulted in the intensification of those lines of work designed to make this country independent of imported foodstuffs. The entire European staff of the department was in the Colony within two months of the beginning of the war. The important features of the year's work are summarised in the following paragraphs.

### AGRICULTURAL SURVEYS.

12. The survey of the potential wetland rice areas of the coastal belt of the Southern Province, the first part of which was carried out by Mr. G. M. Roddan and reported on in the Annual Report for 1938, was extended to include Sherbro and adjacent islands and the mangrove and grass-land areas of the mainland as far east as the River Wanje at Lake Mape. This survey has shown that only 5 per cent. of the suitable swamp land is cultivated and that over 200,000 acres remain to be developed.

13. The potentialities of the Kafu Bulom, Loko Masama and Koya Chiefdoms were surveyed by Mr. R. R. Glanville mainly from the point of view of improving and augmenting the supply of foodstuffs for the Freetown market.

14. The survey of Kafu Bulom showed the possibilities of increasing both upland and wetland crops, and suggestions were made with regard to experimental and extension work in that area.

15. In Loko Masama, it was revealed that out of a total area of over 12,000 acres of tidal swamp land, probably 8,000 acres could be utilised for rice, if, in certain cases, a system of water control were established.

16. In the Koya Chiefdom, conditions are normally too saline for rice growing, but by impoldering probably 5,000 acres could be cultivated.

17. By diverting the Plant Pathologist from his normal duties, it was possible to begin a much-needed survey of cacao-producing chiefdoms in the south-east of the Protectorate.

18. The areas under consideration for the Livestock Farm were inspected again during the driest months of the year, and a site was finally selected at Tekaw, near Makeni.

## NORTHERN PROVINCE—UPLAND AREAS.

19. Mr. R. R. Glanville, Senior Agricultural Officer, was resident at Makeni, and in charge of the upland areas of the Northern Province, from January 1st to March 9th and from October 4th to the end of the year. Mr. E. I. Nisbett, who was stationed at Rokupr took charge during the interim but was only able to visit the area very occasionally. During the last quarter of the year Mr. Glanville assisted the Livestock Officer with construction work at the Livestock Farm at Tekaw.

20. *Sub-stations and Extension Work.*—The usual work of multiplication of seed and extension work among the surrounding farmers was carried out at Makeni, Batkanu and Port Loko and good progress was made.

21. *Rice.*—In all three Districts the cultivation of foodstuffs, especially rice, has been encouraged. Over 100 bushels of seed of improved varieties were distributed to selected farmers. G.E.B. 24 and Kavunginpoothala have done well, the latter in the more deeply flooded swamps, and there is a keen demand for seed.

22. *Yams.*—There has also been a marked increase in the cultivation of yams following the supply of seed by this department.

23. *Oil-palms.*—Oil-palms are still being encouraged in areas where palm oil is needed for local consumption and good results have been obtained with improved varieties.

24. *Coffee.*—Coffee still interests farmers and some 70 plantations and 127 nurseries were established during the year.

25. *Ploughing.*—Ploughing continues to make headway in the Mabole valley but is mainly restricted to swamp land. More farmers have applied for assistance which will be given as soon as an Agricultural Officer is available to supervise work in that area.

26. *Crop Pests and Diseases.*—There was no serious outbreak of pests or diseases. There was no occurrence of locusts.

27. *Food Production.*—1939 was another good year for farmers and total food production was above normal. Although the upland rice crop was light in some of the Northern Chiefdoms the crop in the chief surplus-producing areas was very good, and more than compensated for deficiencies elsewhere. The area under wetland rice was again slightly increased and, as the yield was normal, production was more than normal. The fundi and other millet crops were normal. The groundnut crop was the heaviest for many years and the area under other root crops, especially yams, cassava and sweet potatoes was apparently greater than ever before.

28. In connection with agricultural progress Mr. Sayers, Commissioner, Makeni Division, states:—

> "The substitution of a fixed tax in lieu of tribute in Native Administration Chiefdoms has stimulated the efforts of the younger farmers who now feel more certain of getting the full benefit of their labours."

## NORTHERN PROVINCE, SCARCIES (WETLAND) AREA.

29. Mr. E. I. Nisbett was in charge throughout the year. Mr. A. F. Mackenzie assisted from the beginning of the year till April 22nd, when he went on leave. Mr E. S. Garner returned from leave on April 4th and assisted in the work of the station for the remainder of the year. Mr. Nisbett gave some supervision to the Colony Circle from March 27th to September 27th during the absence on leave of Mr. H. Macluskie.

30. The rains were somewhat late, but were abnormally heavy. The rainfall in May, in spite of the late commencement was about average in quantity, in June was more than double the average and in July was up to average. The late advent of rains delayed the sowing of nurseries and consequently rice-planting was also a little late, but the weather conditions were very favourable to the growth of the rice, a fact that may have had some bearing on the almost complete absence of *Piricularia oryzæ* during the season. In general, crops were good.

31. *Wetland Rice.*—Some damage was done by the early rise of the Scarcies rivers which washed out newly planted seedlings during the daily tidal inundations, but damaged farms were all replanted.

32. The seed distribution scheme which started in 1935 continues to be very popular. 2,300 bushels were distributed on the Scarcies and 136 bushels in the Port Loko Creek, an increase on any previous year. The seed distributed included 1,667 bushels of G.E.B. 24, 403 bushels of Kavunginpoothala, 84 bushels of Lead and 46 bushels of Ro. 1. Farmers who receive seed are required to rogue that part of their farm from which the seed for return is to be obtained, and are advised to rogue as much of their farms as possible. A good proportion of the returned seed is satisfactory. A seed farm has been opened with the object of further increasing the supplies of pure seed.

33. While G.E.B. 24 is still a popular rice, many farmers prefer Kavunginpoothala as it is less susceptible to *Piricularia oryzae*, and there has been a great increase in the cultivation of Kavunginpoothala especially in deep water swamps.

34. Ro. 1, a selection of Toma with a white testa, developed at the Rokupr Rice Station, was the first locally improved rice to be distributed and it has proved very popular.

35. *Root Crops.*—There is a continued demand for better varieties of yams and cassava. The cultivation of both these crops, and of sweet potatoes, is extending.

36. *Vegetables.*—A promising start has been made in the encouragement of vegetable growing, particularly tomatoes.

37. *Poultry.*—The pure bred Rhode Island Red fowls at the Rokupr Station continue to be a source of interest to local farmers, and there is a constant demand for hatching eggs.

38. *Pests and Diseases.*—No locusts or other pests of importance appeared during the year.

39. *Co-operation.*—Two new societies were established at Tumbo and Rosino, bringing the number of the societies to five and the number of members to 149. These little societies are paving the way for a bigger movement when staff becomes available. Over 9,000 bushels of rice were marketed by the societies during the year.

40. *Experimental Work.*—The work at Rokupr Rice Research Station is summarised at the end of this section.

## SOUTHERN PROVINCE—UPLAND AREAS.

41. Mr. J. W. D. Fisher, Senior Agricultural Officer, was stationed at Njala and in charge of activities in the Southern Province, including Njala Agricultural Station, from January to the middle of June when he went on leave. Mr. J. D. Gillespie then took over these duties (excluding the Sembehun area) and was alone in the Province until Mr. Fisher returned from leave in November, except for a brief period in August and September when Mr. Glanville was at Njala.

42. The work at Njala Agricultural Station is summarised at the end of this section of the report.

43. Early rains were experienced which interfered to a certain extent with upland farming operations. The rainfall in May was considerably below normal but thereafter it was normal.

44. *Extension Work.*—This was of necessity once again drastically curtailed owing to the shortage of Agricultural Officers. Several Agricultural Instructors were employed on district work, particularly in the eastern part of the province. They were based on Njala. In November, Mr. F. C. Deighton, Plant Pathologist, assisted with district work in addition to his substantive duties. He devoted his attention to the cacao growing chiefdoms in the south-east and he was able then to carry out preliminary work for an agricultural survey of the area, which he has since completed.

45. One sub-station only was maintained, the small station at Pandobu in the Kailahun District.

46. *Pests and Diseases.*—No disease or insect pest of major importance was recorded during the year.

47. The Livestock Officer investigated two cases of " Fly Worry " due to attack of Stomoxys fly.

48. *Crops.*—Rice was again plentiful, a satisfactory crop being reaped in the upland farms and very good yields were got from the wet-land areas. The G.E.B. 24 variety was introduced to the Southern Province in 1936 when some twenty farmers were supplied with seed. During the year under report some 240 bushels were distributed in the districts, (excluding Sembehun area for which a separate report is submitted), under the Revolving Seed Scheme.

49. *Cacao.*—Mr. J. W. D. Fisher was able to undertake a quick tour in some of the cacao-growing chiefdoms in April. The production of cacao is increasing steadily. Recommendations were made regarding the opening up of the area by the construction of a motor road from Giema to Zimi. Attention was again drawn to the serious damage caused to this crop by monkeys.

50. *Citrus.*—Budded grapefruit and orange plants were distributed from the Njala nursery. The Plant Pathologist inspected most of the citrus plantings in the province and it is satisfactory to know that citrus scab is now almost completely eliminated.

51. *Garden Crops.*—The distribution from Njala nurseries of improved varieties of yams, cassava and beans, and of seed of both introduced kinds and of native origin was greatly increased during the year. The production of foodstuffs at towns along the railway continues to increase. This is particularly the case in the towns of Moyamba District, a fact which can be directly attributed to the steady supplies of planting material which have for many years now gone out from Njala.

52. *Livestock.*—Work was continued in a modest way at Njala on cattle, sheep, pigs and poultry. Berkshire breeding stock was imported to improve the local pigs.

53. The poultry improvement schemes referred to in the previous year's report were continued, breeding stock being distributed from Njala Agricultural Station. Towards the end of the year distribution was rather seriously interfered with owing to the outbreak of an unidentified disease.

54. *Pandobu Sub-station.*—This sub-station was closed down at the end of the year as existing staff arrangements did not permit of sufficient supervision. It has proved useful in the past for the distribution of planting material, and during this year some 5,000 lb of Jafna King yams and a quantity of pigeon peas were distributed free to farmers in the neighbourhood.

## SOUTHERN PROVINCE—SEMBEHUN (WETLAND) AREA.

55. Mr. G. M. Roddan was stationed at Sembehun and was in charge of the district work in the area, which comprises the western half of Moyamba District and the whole of Bonthe District. His attention was fully occupied with the opening of the new agricultural station at Sembehun, by the agricultural survey of a large part of the district, in supervising schemes of assistance to farmers in clearing mangroves, and in distributing seed rice.

56. *Rice.*—A start was made with the distribution of seed rice, particular care being taken to ensure that only varieties suited to the very varying conditions were distributed. Altogether some 277 bushels of seed were issued under the revolving seed scheme to 120 farmers.

57. *Mangrove Loan Scheme.*—To encourage farmers to take up wetland cultivation, the sum of £500 was voted by Government to be spent in the area. Money was issued on loan to selected farmers for the purpose of financing their work of clearing the mangrove forests. The money will be repaid in three annual instalments commencing after three years, and interest charged at the rate of ten per cent. The loans were eagerly taken up, the full sum being distributed within eight chiefdoms to 94 farmers. By the end of the year it was estimated that 645 acres had been felled, comprising 573 acres of mangrove and 72 acres of rafia palms in the tidal swamps. Before the end of the year the Protectorate Mining Benefits Fund took over the finance of the scheme and a total of £2,500 was allocated ; the money will be available in annual amounts of £500 during five years commencing in 1940. Repayments of loans were expected to provide capital for redistribution in the sixth and succeeding years as may be necessary.

## COLONY PENINSULA.

58. Mr. H. Macluskie was in charge from January to March and from September to December. In the interval, Mr. E. I. Nisbett supervised the work of the Colony, paying monthly visits from Rokupr. After the outbreak of war in September, Mr. Macluskie also assisted for a short time in the Food Controller's Office.

59. Normal weather conditions were experienced although tornadoes were less violent than usual after the rains.

60. Two small stations were continued at Newton and Cline Town. At Newton, the principal work is the study of tree crops such as cinnamon, cashew, coffee and mango. At Cline Town, the budding of mangoes was successfully carried out, a high percentage of " takes " being obtained. Various vegetables are grown on the farm, and it assists greatly the distribution of seed in the Colony Peninsula.

61. *Legumes.*—Black-eye peas were grown more widely than hitherto, and it is encouraging to note the gradual spread of this leguminous crop which is invariably planted towards the close of the rains amongst young cassava.

62. *Rice.*—Wetland rice cultivation continued to engage attention, and the area under tidal swamp rice was slightly increased. Good yields were obtained, but better agricultural methods would improve these still further.

63. Seed distribution continued with marked success and 311 bushels were lent to farmers. This is ninety-six bushels more than in 1938. The varieties introduced in 1938—G.E.B. 24 and Kavunginpoothala—proved very popular and the demand for them is increasing.

64. *Market Gardening.*—Market gardening is principally carried out in the pockets of alluvial soil in the hilly area. The outbreak of war gave the gardeners every opportunity to increase their output, an opportunity that was generally taken full advantage of, the valleys being well exploited.

65. As a war-time measure, a register was made of selected market gardeners to whom a supply of vegetable seeds was later given, in order to encourage the production of vegetables to meet the market provided by a greatly increased European population, and two small substations were opened at Hastings and Goderich to assist market gardeners.

66. *School Gardens.*—The scheme for establishing school gardens in the Colony villages started in 1938 in co-operation with the Education Department, is meeting with some success. The problem of looking after the gardens during holidays remains, but this difficulty should not prove insurmountable.

67. *Agricultural Society.*—The usual Agricultural Show was held by the Society at which there was keen competition. The 600 or more exhibits showed a marked improvement in quality on former years, particularly the fresh fruits and vegetables. The Department's exhibits had a considerable educational value and aroused much interest.

## RESEARCH AND INVESTIGATION.

68. The following is a brief summary of the more important work carried out in the various stations. The full reports submitted by individual officers appear in the departmental records as usual; they will not be printed during war-time.

## MYCOLOGICAL SECTION.

69. The Plant Pathologist was seconded to the Provincial Administration from 29th August to 11th November.

70. *Piricularia oryzæ* and *Ustilaginoidea virens*, the two important fungi attacking rice, were studied. Six new minor fungi or host plants were recorded during the year, while twenty indentifications of fungi, not previously recorded in Sierra Leone, were received from the Imperial Mycological Institute.

71. Nearly 500 specimens of fungi and 250 of flowering plants were collected during the year and despatched to the Imperial Mycological Institute and the Royal Botanic Gardens, Kew, respectively, duplicates being placed in the Department's herbarium.

## ENTOMOLOGICAL SECTION.

72. The Entomological Assistant continued to be in charge of this section until 23rd December when the newly appointed Entomologist arrived.

73. Observations were made on pests of cattle and local crops and, where possible, practical control measures were recommended but no systematic investigations were carried out on any particular pest.

74. On the apicultural side progress was made. A new type of hive was designed embodying the queen excluder, but simple enough for the native to make and use. Up to the present these hives have proved satisfactory and it is hoped that after a further test they will prove suitable for distribution.

## ROKUPR EXPERIMENTAL RICE STATION.

75. *Introductions of New Rices.*—Two native rices which appear to be varieties not hitherto grown on the farm—Pa Yabu from a tidal swamp near Rosino, and American, a kind widely grown in the Moyamba District, were grown for observation.

76. *Rices Discarded.*—Four Madras, two Burma and seven local varieties were discarded after trials had indicated they were unlikely to be of use in Sierra Leone.

77. *Pure Line Selections, First Year.*—The varieties Bali, Indo-China, Ngasein, Panianala and Yenti were planted.

78. *Second Year.*—Eight single plant selections of Co. 7, fourteen of G.E.B. 24 and ten of Toma were tested for purity. Graphs showing flowering frequencies were made for this purpose. Other characteristics noted were strength of straw, absence of pink testa, and quality of grain. The best of the selections will be subjected to comparative yield trial in 1940.

79. *Third Year.*—Of the short duration rices the following local and introduced selections were subjected to a comparative yield trial: No. 79 and Lead (British Guiana), and D.C. 39, D.C. 5, D.C. 42, Yenti and Bensalay (Sierra Leone). The three first mentioned selections yielded significantly more than the control (D.C.—unselected). Of the long duration rices four of the local Lal selections, two Bis and one Pa Lil, and the introduced Kavunginpoothala were tested. The control (Bis-unselected) was significantly lower than all the others except Bis 101, Pa Lil 196 and Pa Lil (unselected). Kavunginpoothala was significantly higher than Bis and Pa Lil selections.

80. *Fourth Year.*—Three lines of Fodea and two of Toma were tested against new controls of bulked farmers' seed without significant results.

81. *Cultivation Trial, Second Year.*—This is a comparative trial designed to show the differences in yield with the variety G.E.B. 24 under different methods of cultivation. The experiment will be repeated over a number of years, but the present results indicate that cultivation during February/March (dry period) is of definite value.

## ROYEL DEEP-WATER SWAMP FARM.

82. Experimental work in this farm was confined to a comparative yield trial with the four varieties: Kavunginpoothala, Indo-China, Baitel Fakir and Toma. There were no significant differences in yield

## NJALA AGRICULTURAL STATION.

83. *Maintenance of Fertility Experiments.*—The fertility experiment with pigeon pea was carried a stage further. Pigeon peas were sown on the remaining 20 plots and in 1940 the two blocks will all be under a crop of rice.

84. *Experiments with Centrosema.*—A crop of maize was grown on the two blocks of *Centrosema plumieri*, on which sheep had previously grazed by strips in order to test the residual effect. The grazed strips gave a slightly higher yield per acre than the ungrazed, but owing to the fact that *C. plumieri* is not a suitable fodder species and the sheep grazing on it were found to lose condition, no great significance need be attached to this result.

85. *Rice Selection—Pure Line Selection of Upland Rices.*—Selection was continued on two local upland rices.

86. *Ginger.*—An attempt was made to separate the various types of ginger known to the farmers as " Black," " White " and " Red." Plots of the three kinds were grown but at harvest it was found difficult to distinguish between the white and black types. Work will be continued along these lines in the hope of isolating two or more types.

87. *Oil Palms—Njala Oil Palm Plots.*—Yield records were kept as usual for the Nigerian, Angola and Deli palms. Records from the native oil palms were discontinued early in the year as these palms have given much lower yields than any introduced variety, and the fruit is inferior.

88. *Coffee.*—The various plots are thriving having made a good recovery from the effects of the dry season. Yields are poor, however, and measures are in hand for the encouragement of stem shoots to increase fruiting capacity.

89. *Citrus.*—Two new blocks of one acre each were planted and plants are thriving. All citrus plots are under cover crop, chiefly *Pueraria* sp. Canning trials were continued with satisfactory results.

90. *Pineapples.*—Five varieties comprising Smooth Cayenne, Red Spanish, Queen, Baronne de Rothschild and Njala No. 1 raised from stem cuttings were planted on one acre with a view to testing the possibility of growing this crop in the lateritic uplands. The general appearance of the block is promising.

91. *Cinnamon.*—The Cinnamon block is thriving.

92. *Black Pepper.*—It seems clear now that this crop cannot be grown satisfactorily at Njala. It has now been tested under a variety of conditions for a number of seasons without success ; vines make a valiant struggle for existence but make comparatively little growth.

## SEMBEHUN AGRICULTURAL STATION.

93. Work started in this new station early in the year. It was possible to get a considerable area of the tidal swamp farm cleared, levelled and bunded and planted up with twenty varieties of rice for observation. The following were among the best of the yields recorded : Kavunginpoothala, 2,527 lb. per acre ; G.E.B. 24, 2,437 lb. per acre ; Bolo No. 115 selection, 2,200 lb. per acre.

94. Four varieties of rice were grown in an adjacent inland swamp, the purpose of which is to demonstrate the efficiency of cultivating rice year after year in the same swamp with sweet potatoes and other native vegetables as an intermediate crop in the dry season.

95. Permanent crops on this station include oil palm, citrus, and various fruit trees.

## TEKAW STOCK FARM.

96. During January and February likely sites for the Stock Farm seen during the rains of 1938, were again inspected. An area at Tekaw, near Makeni, was finally selected.

97. *Cattle.*—On the outbreak of war, it was decided, as a war emergency, to create a reserve herd of cattle at Tekaw to ensure a supply of meat for Freetown in the event of failure to obtain supplies from the usual sources. A start was made in October to buy cattle for the breeding and reserve herds.

98. About the middle of November a number of the young animals of between one and two years of age were lost from what appeared to be Hoven and plant poisoning. These animals were ill from seven to fourteen days. They showed rapid emaciation despite extra feeding. Blood smears revealed *Trypanosoma congolense* in four instances. In other cases, post-mortem examination revealed adult liver flukes and liver abscesses. It was noted that cows and young heifers were not affected, and calves born as early as the beginning of November were still healthy and strong at the end of the year. Twenty-eight animals died in all.

## RICE MILLING.

99. The Mill had a successful year's run, 50,820 bushels of rice were milled, an increase of 13,851 bushels over 1938. A profit of £393 was made on the year's working.

## PRODUCE INSPECTION.

100. Inspection of produce was carried out on the usual lines. The African staff of this branch of the Department was increased to fourteen sub-inspectors.

101. Instruction was intensified among the piassava producers in the Sulima area and it will be noted elsewhere that the export of piassava touched a new high level.

102. The number of persons convicted under the Native Produce Ordinance was sixty-five.

103. 299 certificates of justness were issued under the Weights and Measures Ordinance.

## AGRICULTURAL EDUCATION.

104. The Njala Training College, the objects of which were described in the Annual Report for 1938, was inaugurated and a report on its first full year's working has been submitted separately by the Principal. A most encouraging start has been made and this Training Scheme promises to be a success.

105. The S. B. Thomas' Agricultural Academy, Mabang, continued to assist the Agricultural Department by completing the first two years training of a further batch of apprentices.

## SECTION III—FINANCE.

106. The amount provided by Government for carrying out the work of the Department was £26,705 ; £17,220 of which was for Personal Emoluments and £9,485 for Other Charges. This provision, when compared with that for the previous year showed an increase of £4,393. The following are the main items contributing to this increase:—

(*a*) The cost of running the Rice Mill which hitherto had been met from a suspense account was included under the Department's Expenditure Votes.

(*b*) General expansion of work of the Department necessitating increased provision under Labour, Tools, Stock and Travelling.

The actual expenditure at the close of the year was £25,813 12*s.* 8*d.*

107. *Revenue.*—The Revenue earned by the Department during the year was £4,350 4*s.* 2*d.* This was £2,200 8*s.* 10*d.* more than that of the previous year.

108. *Rice Mill.*—Revenue amounted to £3,721 1*s.* 11*d.* and expenditure to £3,328 11*s.* 10*d.*, showing a profit of £392 10*s.* 1*d.* on the year's working.

109. *Grants—Protectorate Mining Benefits Fund—Njala Training Scheme.*—Expenditure under this scheme amounted to £3,423 0*s.* 4*d.*

## SECTION IV—LEGISLATION.

110. The following legislation dealing with agricultural matters was enacted during 1939 :—

(i) Ordinance No. 20 of 1939—Co-operative Societies Ordinance. This requires little explanation ; it provides for the working of co-operative societies in Sierra Leone.

(ii) Rules No. 7 of 1939—Native Produce (Export of Rice) (Amendment) Rules, 1939. This amending legislation removes certain anomalies that have become obvious in the Native Produce (Export of Rice) Rules, 1932. It revises the method of examination of cleaned and husk rice and lays down new standards of purity for cleaned or milled rice.

I have the honour to be,

SIR,

Your obedient Servant,

F. J. MARTIN,
*Director of Agriculture.*